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## **Comparison between removal of umbilicus versus saving the umbilicus along with umbilical sinusectomy for infected umbilical sinus**

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**Abstract**---Umbilical sinus is a very rare variety of malformation among all the vitellointestinal duct anomalies. There are two causes of umbilical sinus. One arising from the remnants of vitellointestinal duct and another arising from the remnants of allantois (urachal sinus). Its clinical presentation is that of persisting umbilical discharge in younger children and young adults. Surgical intervention is the recommended treatment for most of these anomalies. A study was done on 50 patients who were diagnosed as umbilical sinus. 25 patients were subjected to sinusectomy with umbilicus excision and another 25 patients were subjected to sinusectomy with saving the umbilicus. Wound infections was noted in 8 of the patients whose umbilicus was saved. Later on they had recurrence of discharge from the umbilical sinus which required resurgery along with removal of umbilicus. In the other group whose umbilicus was removed only one had post operative wound infection which healed well without leading to persistence of discharge and required no further surgery. This study we tried to conclude that removing the umbilicus along with the sinusectomy is better choice of procedure than leaving behind the umbilicus.

**Keywords**---umbilical sinus, sinusectomy, umbilicus excision, umbilicus.

**Introduction**

Umbilical sinus is a very rare variety of malformation among all the vitellointestinal duct anomalies. There are two causes of umbilical sinus. One arising from the remnants of vitellointestinal duct and another arising from the

remnants of allantois (urachal sinus). Its clinical presentation is that of persisting umbilical discharge in younger children and young adults. Seen more commonly in males than females. Histopathology reveals intestinal mucosal covering of the sinus. 1 Vitellointestinal duct or omphalomesentric duct joins the midgut with extra embryonic part of yolk sac. This duct disappears in the later part of embryonic life. A wide variety of malformation or anomalies may occur as a result of vitelline duct failing to obliterate completely.<sup>2</sup> They may be in the form of patent duct, umbilical sinus, a vitelline cyst, a fistula or a diverticulum (meckel's diverticulum). Meckel's diverticulum is the commonest among these anomalies and others are rare. Rarest among these is umbilical sinus. Umbilical urachal sinus or urachal sinus is a congenital disorder of the urinary bladder caused by failure of obliteration of proximal or distal part of the allantois and presentation is with umbilical discharge and is seen more commonly in children and young adults. Surgical intervention is the recommended treatment for most of these anomalies.<sup>1</sup> For umbilical sinus, sinusectomy with or without removal of umbilicus is the recommended treatment. Both of these procedure have advantages and disadvantages. In this study we are trying to compare cure rate and complications of removal of umbilicus or saving the umbilicus along with sinusectomy.

### Materials and Methods

The study was conducted on 50 patients who were diagnosed with umbilical sinus from July 2018 to July 2021 in a tertiary care hospital. All these patients were explained regarding the type of procedure and consent was taken. 25 patients were subjected to sinusectomy with umbilicus excision and another 25 patients were subjected to sinusectomy with saving the umbilicus. Ultrasound abdomen was done to confirm the presence and extent of the sinus. Both the procedure were performed under spinal anaesthesia. Both the procedure were performed with mid line vertical incision 2cm above and 2cm below the umbilicus. In one group umbilicus was removed along with the sinus. In another group umbilicus was saved and only sinusectomy was done. In both the group peritoneum was opened to confirm and remove the distal extent of the sinus. Follow up of patients was done for minimum of 6-12 months.

### Results

Table 1  
Age statistics

Age(years)	Umbilicus excision	Umbilicus saved	Total
11-20	18(72%)	16(64%)	34(68%)
21-30	6(24%)	8(32%)	14(28%)
31-40	0(0%)	1(4%)	1(2%)
41-50	0(0%)	0(0%)	0(0%)
51-60	1(4%)	0(0%)	1(2%)
Total	25	25	50 (100%)

Table 2  
Sex Statistics

Sex	Umbilicus excision	Umbilicus saved	Total
Male	23(92%)	22(88%)	45(90%)
Female	2(8%)	3(12%)	5(10%)
Total	25	25	50 (100%)

Table 3  
Duration of Surgery

Groups	Cases	Mean Duration(mins)	±SD
Umbilicus excision	25	70.2	10.9
Umbilicus saved	25	76.1	12.4

Table 4  
Duration of Stay in Hospital

Groups	Cases	Mean Duration(mins)	±SD
Umbilicus excision	25	5.14	1.7
Umbilicus saved	25	6.1	1.5

Table 5  
Duration of return to activities

Groups	Cases	Mean Duration(days)	±SD
Umbilicus excision	25	11.14	1.12
Umbilicus saved	25	15.1	3.5

Table 6  
Post-operative complications

Complications	Umbilicus excision	Umbilicus saved
Pain	15	18
Urinary retention	11	13
Pus discharge	Nil	8
Re-surgery	Nil	8
Infection	1	8

## Discussion

In the present study, most of the patients were in the age group of 11-20 years 90% of the patients in the study were males. The condition is mostly prevalent in children and young adults.<sup>1</sup> In the study conducted by Suleyman Celebi *et al*, 16 patients underwent surgery for VDP, and the male-to-female ratio was 7:1. <sup>3</sup> In the present study, the duration of surgery was found to be

lesser in patients subjected to sinusectomy with umbilicus excision, which was  $70.2 \pm 10.9$  minutes. Whereas in patients subjected to sinusectomy with saving the umbilicus, the time for surgery was  $76.1 \pm 12.4$  minutes. The duration of in hospital stay was less in patients subjected to sinusectomy along with umbilicus excision ( $5.14 \pm 1.7$  days) as compared to sinusectomy with saving the umbilicus ( $6.1 \pm 1.5$  days). Time lapse between surgery and return to activities was lesser in patients subjected to sinusectomy along with umbilicus excision ( $11.14 \pm 1.12$  days) while in the other group, it was  $15.1 \pm 3.5$  days. In a study by Zheng Liu *et al*, it was found that the mean operative times were  $76.1 \pm 15.4$  minutes in the umbilicus sparing laparoscopic approach group and  $69.2 \pm 13.9$  minutes in the open approach group. More importantly, a shorter length of postoperative hospital stay was noticed in the umbilicus sparing laparoscopic approach group (patients with bladder cuff excision:  $4.1 \pm 1.8$  vs  $6.1 \pm 1.4$  days,  $P = .040$  and patients without bladder cuff excision:  $1.8 \pm 0.5$  vs  $3.6 \pm 0.8$  days,  $P < .001$ ). The mean time to full recovery, defined as return to a normal life without pain, was also significantly shorter in umbilicus sparing laparoscopic approach group ( $11.2 \pm 1.9$  vs  $15.6 \pm 3.1$  days,  $P < .001$ ). The patients with bladder cuff resection had delayed full recovery.<sup>4</sup>

In this study during post operative period pain was there in almost equal number of patients in both the groups. Wound infections was noted in 8 of the patients whose umbilicus was saved. Later on they had recurrence of discharge from the umbilical sinus which required resurgery along with removal of umbilicus. In the other group whose umbilicus was removed only one had post operative wound infection which healed well without leading to persistence of discharge and required no further surgery. Almost same number of patients had pain and retention of urine in both the groups. Zheng Liu *et al* found that postoperative complications, incisional infection, was observed in 1 of the 15 patients (6.7%) after open approach. The patient needed additional management, including debridement, suture, and antibiotics. This complication was improved at the time of discharge.<sup>4</sup> Jalal Eddine El Ammari *et al* reported a case of infected urachal sinus in male adult. The diagnosis was suspected clinically and confirmed with ultrasonography and computed tomography scan. A preoperative cystofibroscopy showed normal aspect of the bladder and excluded sinus communication. An initial broad spectrum antibiotic therapy followed by complete excision of the sinus and fibrous tract without cuff of bladder has been therefore performed. The postoperative course was uneventful. No recurrence was observed after 18 months of followup.<sup>5</sup>

## **Conclusion**

Umbilical sinus is a very rare variety of malformation among all the vitellointestinal duct anomalies. All though there are two described procedures, like removal of umbilicus and saving the umbilicus while doing sinusectomy for umbilical sinus, from this study we tried to conclude that removing the umbilicus along with the sinusectomy is better choice of procedure than leaving behind the umbilicus.

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